## Organic Matter Measurements in Antarctic Micrometeorites.

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Giant micrometeorites with sizes from 25-400 µm have been collected on the Greenland and Antarctica ice sheets. The most uncontaminated samples were collected in the blue ice fields of Cap-Prudhomme in 1991 and 1994 by filtering huge amounts of melt ice water through stacks with different openings (25, 50, 100 and 400 µm (Engrand and Maurette, 1998).

These antarctic micrometeorites (AMMs) are large interplanetary dust particles, mostly fine-grained carbonaceous objects, related to a primitive class of meteorites called carbonaceous chondrites.

Analyses of these grains with different techniques like Electron Energy Loss Spectroscopy (EELS) (Engrand and Maurette, 1997) and stepped combustion-static mass spectrometry (Wright *et al*., 1997) yielded high concentrations of carbonaceous material (~2%) (Engrand and Maurettes, 1997).

Complex organic molecules such as polycyclic aromatic hydrocarbons (PAHs) have also been identified in AMMs (Clemett *et al.*, 1998).

Because these particles seem to be rich in carbon, it is clear that during the heavy bombardment period (between 4.2 and 3.9 billion years ago) they probably had played an important role bringing to the early Earth some of the building blocks important for the origin of life (Anders, 1989).

In order to know if the carbon boren by these particles is organic, we used the micro-FTIR instrument at U10B to analyze one non melted (least thermally altrered) AMM in the size range 100-400 µm from the collection in 1999-2000 (called Du-1-00), one non melted AMM in the size range 100-400µm from the collection in 1994 (called 99-11-73), one terrestrial grain found in the same 1994 collection (called 99-11-T) and a fragment of Murchison as reference because is an hydrous carbonaceous chondrite meteorite with a very well characterized organic carbon content. We characterized the organic matter using the 3 micron C-H stretching absorption features.

The terrestrial grain, used as a control, was collected and curated in the same manner as the micrometeorites, didn't show any absorption feature in the 3 micron region; so it contains no detectable organic matter. The sample named Du-1-00 showed some features at the 3 micron region and at the 3060$cm^{-1}$ region (aromatics). We analyzed this sample later using the Scanning Transmission X-ray Microscope (STXM) at Beamline X1A and learned that a piece of epoxy remained over the sample. The sample named 99-11-73 showed two features at the 3 micron region (at 2924 $cm^{-1}$ and 2853 $cm^{-1}$) which are characteristic of C-H2 symmetric and asymmetric stretching vibrations and a feature at 2959 $cm^{-1}$ characteristic of the C-H3 stretching vibration of aliphatic hydrocarbons. Since the terrestrial grain 99-11-T didn't show any of these features, we suggest this carbon is indigenous of the micrometeorite. But because we just could perform the analysis on two extraterrestrial particles and only one terrestrial, we need to make some other analyses on new particles, terrestrial and extraterrestrial, in order to confirm these results.

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